A NEW SPECIES OF LAGENOPHORA (COMPOSITAE) FROM GUATEMALA[1]

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Lagenophora cuchumatanica Beaman & De Jong, sp. nov.

Herba perennis humilis cum 1-4 caulibus adscendentibus vel decumbentibus usque ad 20 cm longis, usque ad capitula foliosis vel cum pedunculis usque ad 6.5 cm longis; folia basalia cum petiolis 0.7-3.3 cm longis, lamina ovata-elliptica ad orbiculata, margine crenato-dentata, ciliata; folia caulina media oblanceolata vel spatulata, pauci-serrata; folia caulina superiora oblanceolata, sessilia, margine 1-4-serrata, folia suprema subulata, integra; capitula parva, terminalia, solitaria; involucra campanulata, 4.0-5.0 mm alta, 6.0-7.0 mm lata; phyllaria 3-seriata, herbacea, oblongo-lanceolata ad anguste-lanceolata, apice ciliato-fimbriata; flores radii 10-20, 1-seriata, ligula reflexa, viridi-alba, 2.0-2.2 mm longis, apice 2-dentata vel 3-denticulata; flores disci 8-14, corollae viridi-flavae cum lobis patentibus circa 0.7 mm longis; achaenia radii et disci obovata, 3.2-4.0 mm longa, 1.0-1.5 mm lata, glabra, brunnea, margine crassi-nervata, apice annulari glanduloso; pappus nullus.

Low perennial herb from a short, erect or oblique rhizome with fibrous lateral roots; stems 1-4, simple, to 20 cm long, rarely longer, ascending but more commonly decumbent, green to reddish, grooved, flattened or subterete, pilose with short to long, spreading to appressed often purple-based multicellular hairs, leafy throughout or with peduncles gradually elongating in age to 6.5 cm, rarely longer, the summits of the stems somewhat enlarged and densely pubescent below the heads; basal and cauline leaves pubescent with multicellular hairs, the margins ciliate and faintly revolute; basal leaves few (less than 10), the petioles 0.7-3.3 cm long, densely pilose with spreading hairs, less so toward the sheathing base, the lamina ovate-elliptic to orbicular, 0.9-1.8 cm long, 0.7-1.4 cm wide, the margins crenate-dentate with 3-5 pairs of teeth with callous-tipped apices, pubescent below with appressed to spreading hairs, minutely white-dotted and glabrate to appressed-pubescent above with scattered hairs often in rows near and paralleling the margins; lower cauline leaves similar, smaller, soon shriveling; middle and upper cauline leaves sparsely appressed-pubescent below, glabrate above, minutely white-dotted only toward the apex; middle cauline leaves oblanceolate to spatulate,

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serrate with a few callous-tipped teeth; upper cauline leaves oblanceolate with broad, sessile bases and margins with 1-4 small teeth, the uppermost subulate, entire; heads terminal, solitary, rarely more than 1 per stem, often subtended by a single phyllary-like bract; involucre campanulate, 4.0-5.0 mm high, 6.0-7.0 mm wide; phyllaries imbricated in about 3 series, distinct to the base, essentially herbaceous but with very narrow scarious margins and prominent midribs, often carinate near the base, shiny, glabrate to sparsely pilose on the back, the margins sparsely long-ciliate toward the base, the apices ciliate-fringed with often purple, sometimes sub-glandular hairs; outer phyllaries lance-oblong, 3.0-3.8 mm long, about 0.6-0.7 mm wide, minutely white-dotted near the obtuse apex, the middle phyllaries similar in outline and texture, 3.5-4.2 mm long, about 0.9 mm wide, the inner phyllaries thin, narrowly lanceolate, acute, about as long as the outer; receptacle 1.5-2.0 mm across, somewhat concave, naked, with whitish achenial attachment points; ray florets 10-20, pistillate, in one series, the tube ca. 0.1 mm long, its abaxial surface with short, thick glands, the ligule reflexed, 2.0-2.2 mm long, with 2-dentate or 3-denticulate apex, greenish-white, turning purple in age; disk florets 8-14, perfect, the limb greenish-yellow, campanulate, 1.9-2.4 mm long, 5-lobed with spreading, apically thickened lobes ca. 0.7 mm long, turning purple in age; style branches of the disk about 0.6 mm long, pubescent on the outside with short, blunt collecting hairs, glabrous within, the ovate stylar appendages about as long as the stigmatic lines; stamens with minute, blunt apical appendages and rounded anther bases; achenes of disk and ray similar, obovate, those toward the periphery increasingly oblique, compressed, with thick-nerved margins, the faces with minute ridges near the base, shiny, glabrous. brown (greenish-purple when immature), 3.2-4.0 mm long, 1.0-1.5 mm wide, the apices produced into a sticky glandular ring, this 0.4 mm high in the ray, 0.2 mm high in the disk; pappus absent. Plate 1309.

GUATEMALA. HUEHUETENANGO: Sierra de los Cuchumatanes, between Chemal and Tojiah at Km 319.5 on Ruta Nacional 9 N, ca. 3,365 m alt, among low forbs in *Pinus rudis* forest, frequent in a local area, 29 July 1960, *Beaman 3756* (MSC 172203 holotype; F, GH, K, TEX, UC, US, isotypes); same locality as type, 26 Aug 1961, *De Jong 1145* (MSC); Sierra de los Cuchumatanes, between Km 322 and 323, Ruta Nacional 9 N, ca. 3,200 m alt, 27 Aug 1961, *De Jong 1147* (MSC). TOTONICAPAN: on the Tecum Uman Ridge at Km 154 on Ruta Nacional No. 1, ca. 20 km east of Totonicapan, ca. 3,340 m alt, in pine forest, 14 Aug 1960, *Beaman 4170* (MSC).

The genus *Lagenophora* includes upwards of 20 species distributed from Malaysia and the south Asian coast southward around the Pacific rim through Australia, Tasmania,

and New Zealand into southern South America, the Antarctic Islands, and north into the high mountains of Venezuela and Central America. Three species also have been described from Hawaii. Discovery of a species in Guatemala extends the Central American range of the genus northward from Panama. South Pacific distribution patterns of this type have been recognized since Hooker's (1853) classical account of the relationships of the flora of New Zealand. Several of the genera noted by Hooker (eg. *Drimys*, *Colobanthus*, *Acaena*, and *Oreomyrrhis*) have ranges which closely parallel that of *Lagenophora*.

Members of the South Pacific element such as *Lagenophora* which range into tropical latitudes in the western hemisphere occur as isolated populations at high altitudes. In Central America their distribution always must have been discontinuous because the area has not been traversed by a high-mountain system in Cenozoic time (Schuchert, 1935). Long-distance dispersal seems to provide the most plausible explanation for the presence of *Lagenophora* in Guatemala (and probably also in Panama, Venezuela, and Hawaii). The sticky glandular achenial apices may have facilitated its dispersal. Although no data on the breeding system of *Lagenophora* are available, one might suspect self-compatibility on the basis of the inconspicuous heads and ray corollas (Plate 1309). If it is self-compatible, this could also be a key factor in its distribution. As Baker (1955) has noted, autogamy makes possible the establishment of a new population from a single propagule. A strong correlation between wide disjunction and self-compatibility has been demonstrated by Raven (1963) for amphitropical species. The distribution of other groups like *Lagenophora* which cross the tropics on high mountains similarly may be related to autogamy and long-distance dispersal.

The two mountains upon which *Lagenophora cuchumatanica* has been found have different geological histories. The Sierra de los Cuchumatanes is made up chiefly of limestones which Schuchert (1935) suggests are of Cretaceous age. The Tecum Uman Ridge is composed of Tertiary rhyolitic lava domes (Williams, 1960). Both areas are of

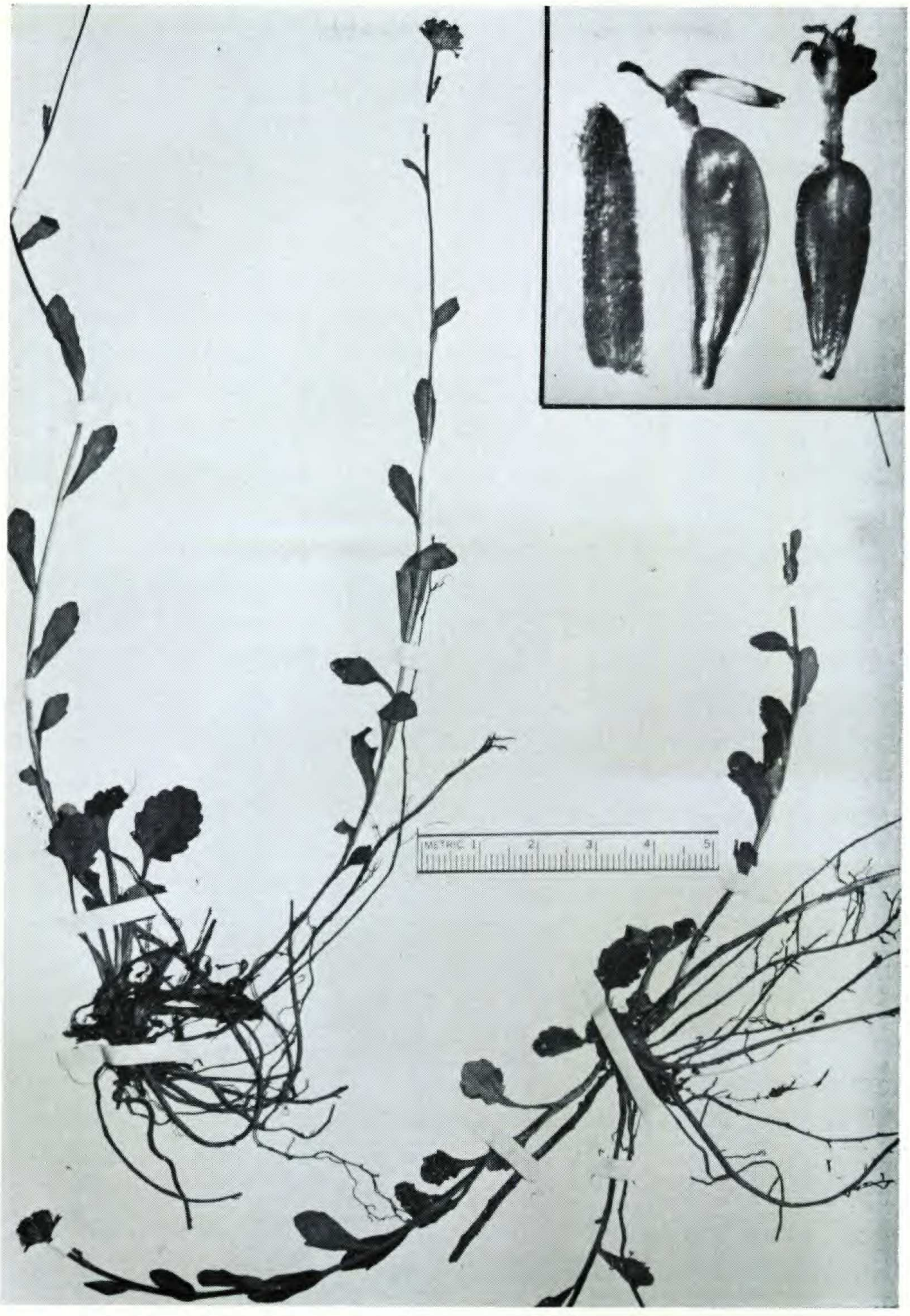

Plate 1309. Portion of the holotype of *Lagenophora cuchumatanica*. Insert, from left to right, shows outer phyllary, ray floret with reflexed ligule, and disk floret (× 8.3).

considerably greater geological age and have much richer high-altitude floras than the neighboring Quaternary volcanic cones. Although the geology differs, the habitats of the two populations are similar. Both localities are on nearly level terrain, in pine forests which are interspersed with large meadows (llanos), and have many other species in common.

Slight morphological differences are evident between specimens from the Sierra de los Cuchumatanes and the single plant *(Beaman 4170)* from the Tecum Uman Ridge. The middle cauline leaves of the latter are conspicuously spatulate with 4-5 marginal teeth whereas the Cuchumatanes specimens have oblanceolate middle cauline leaves with 3-4 teeth.

This species, *Lagenophora cuchumatanica,* is closely related to the Venezuelan *L. andina* Badillo. From Badillo's (1947) description and illustrations we thought that the two taxa might be conspecific, but an examination of isotype material of that species revealed several important differences which are summarized in Table I. These two species also are related to *L. panamensis* Blake, but the latter has a heavier caudex, more elongate basal and cauline leaves, larger heads, and more numerous rays. As noted by Blake (1939) *L. panamensis* seems to be closer to the Hawaiian *L. mauiensis* than to the southern South American species which are scapose or nearly so. The Central and northern South American species seem to have more characters in common among themselves than with other members of the genus.

The genus *Lagenophora* was included in the subtribe Bellidinae of the Astereae by Hoffmann (1894). In a re-evaluation of this group, De Jong (1964) concludes that it is artificial and suggests that its members be assigned to other subtribes of the Astereae. He considers *Lagenophora,* along with the related *Myriactis, Rhynchospermum,* and *Solenogyne,* to belong to the Grangeinae.

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Table I. Characters which distinguish *Lagenophora cuchumatanica* from *L. andina*.

L. cuchumatanica	*L. andina (Steyermark 57501, US)*
1. Basal leaves pilose below, glabrous above except for pilose rows near the margins.	1. Basal leaves hirsute above and below.
2. Basal leaves broadly ovate to orbicular, blades 1.2-1.5 cm long.	2. Basal leaves obovate, blades 2.0-3.0 cm long.
3. Cauline leaves, at least the lower, spatulate.	3. Cauline leaves oblanceolate to subspatulate.
4. Stems unbranched.	4. Stems with 1-2 lateral branches above.
5. Ray florets in 1 series, ca. 10-20.	5. Ray florets in 2 series, ca. 35-45.
6. Tube of the ray ca. 0.1 mm long.	6. Tube of the ray ca. 0.5 mm long.
7. Immature achenes (for comparison with *L. andina*) ca. 3 mm long.	7. Immature achenes ca. 2 mm long.